REMARKS

Claims 1-3, 6-18 and 22-26 remain for consideration. Claims 4, 5, and 19-21 are canceled without prejudice in view of the allowance of the parent application. The specification has been updated with respect to references to cited applications. Claims 1, 10 and 17 have been amended to more particularly point out Applicants' claimed invention. The amendments of claim 1, 10 and 17 are supported by the specification, for example, at page 4, lines 26-27. New claims 24-26 are supported by the specification, for example, at page 30, lines 1-4. No new matter is introduced by the amendments or the new claims.

The Director of the Patent and Trademark Office is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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Marked-Up Amendments

IN THE SPECIFICATION

After the title, the following paragraph is added:

-- CROSS REFERENCE TO RELATED APPLICATIONS

This application is a continuation of copending and commonly assigned U.S. Patent Application Serial No. 09/246,076 now U.S. Patent _____ to Horne et al., entitled "Metal Vanadium Oxide Particles," incorporated herein by reference.--

At page 6, line 28, the paragraph is amended as marked:

The reaction conditions determine the qualities of the particles produced by laser pyrolysis. The reaction conditions for laser pyrolysis can be controlled relatively precisely in order to produce particles with desired properties. The appropriate reaction conditions to produce a certain type of particles generally depend on the design of the particular apparatus. Specific conditions used to produce vanadium oxide particles in a particular apparatus are described below in the Examples. Additional information on the production of vanadium oxide nanoparticles by laser pyrolysis is provided in copending and commonly assigned U.S. Patent application serial number 08/897,778 to Bi et al. now U.S. Patent 6,106,798, entitled "Vanadium Oxide Nanoparticles," incorporated herein by reference. Furthermore, some general observations on the relationship between reaction conditions and the resulting particles can be made.

At page 20, line 18 to page 21, line 2, the paragraph is amended as marked:

An alternative design of a laser pyrolysis apparatus has been described in copending and commonly assigned U.S. Patent Application No. 08/808,850 now U.S. Patent 5,958,348, entitled "Efficient Production of Particles by Chemical Reaction,"

incorporated herein by reference. This alternative design is intended to facilitate production of commercial quantities of particles by laser pyrolysis. The reaction chamber is elongated along the laser beam in a dimension perpendicular to the reactant stream to provide for an increase in the throughput of reactants and products. The original design of the apparatus was based on the introduction of purely gaseous reactants. Alternative embodiments for the introduction of an aerosol into an elongated reaction chamber is described in copending and commonly assigned U.S. Patent application serial No. 09/188,670 to Gardner et al., filed on November 9, 1998, entitled "Reactant Delivery Apparatuses," incorporated herein by reference.

At page 26, line 21, the paragraph is amended as marked:

The conditions to convert crystalline VO_2 to orthorhombic V_2O_5 and 2-D crystalline V_2O_5, and amorphous V_2O_5 to orthorhombic V_2O_5 and 2-D crystalline V_2O_5 are describe in copending and commonly assigned U.S. Patent application serial number 08/897,903, to Bi et al. now U.S. Patent 5,989,514, entitled "Processing of Vanadium Oxide Particles With Heat," incorporated herein by reference.

At page 30, line 20, the paragraph is amended as marked:

Because of their small size, the primary particles tend to form loose agglomerates due to van der Waals and other electromagnetic forces between nearby particles. Nevertheless, the nanometer scale of the primary particles is clearly observable in transmission electron micrographs of the particles. The particles generally have a surface area corresponding to particles on a nanometer scale as observed in the micrographs. Furthermore, the particles can manifest unique properties due to their small size and large surface area per weight of material. For example, vanadium oxide nanoparticles generally exhibit surprisingly high energy densities in lithium batteries, as described in copending

and commonly assigned U.S. Patent Application Serial No. 08/897,776 now U.S. Patent 5,952,125, entitled "Batteries With Electroactive Nanoparticles," incorporated herein by reference.

At page 35, line 16, the paragraph is amended as marked:

Positive electrode 454 includes electroactive nanoparticles such as metal vanadium oxide nanoparticles held together with a binder such as a polymeric binder. Nanoparticles for use in positive electrode 454 generally can have any shape, e.g., roughly spherical nanoparticles or elongated nanoparticles. In addition to metal vanadium oxide particles, positive electrode 454 can include other electroactive nanoparticles such as TiO_2 nanoparticles, vanadium oxide nanoparticles and manganese oxide nanoparticles. The production of TiO_2 nanoparticles has been described, see U.S. Patent Ser. No. 4,705,762, incorporated herein by reference. Vanadium oxide nanoparticles are know to exhibit surprisingly high energy densities, as described in copending and commonly assigned U.S. Patent application serial no. 08/897,776 now U.S. Patent 5,952,125, entitled "Batteries With Electroactive Nanoparticles," incorporated herein by reference. The production of manganese oxide nanoparticles is described in copending and commonly assigned U.S. Patent Application serial no. 09/188,770 to Kumar et al. filed on November 9, 1998, entitled "Metal Oxide Particles," incorporated herein by reference.

IN THE CLAIMS

Claims 4, 5, and 19-21 are canceled. Claims 1, 10 and 17 are amended as marked:

1. (Amended) A collection of particles comprising metal vanadium oxide, the particles having an average diameter less than about [500 nm] 1 micron.

10. (Amended) A method of producing particles of metal vanadium oxide comprising heating a mixture of vanadium oxide particles with

a non-vanadium metal compound, the vanadium oxide particles having an average diameter less than about [500 nm]1 micron.

17. (Amended) A battery comprising a positive electrode having active particles comprising metal vanadium oxide within a binder, the active particles having an average diameter less than about [500 nm] 1 micron.

The following new claims are added.

--24. The collection of particles of claim 1 wherein the particles have an average diameter less than about 500 nm.

25. The method of claim 10 wherein the vanadium oxide particles having an average diameter less than about 500 nm.

26. The battery of claim 17 wherein the active particles have an average diameter less than about 500 nm.--